Appendix 4

TITLE II ENVIRONMENTAL COMPLIANCE FACESHEET

Title of POP/SYAP/CSR4 Activity:

CS name/Country/Region: Catholic Relief Services/ India

Funding Period: FY 07 – FY11

Resource Levels:
Total metric tonnage : 97,240 MT
Value of commodity : $ 39.6 million
202(e) grant : $ 5.1 million

IEE Statement Prepared by:

1) Kushal Neogy, State Representative, CRS/Lucknow,

2) Mahesh Kankal, Coordinator PQ CRS/ Hyderabad

Environmental Media and/or Human Health Potentially Impacted

air___ ***water_X_ land_X_*** *biodiversity* (specify)_____*human health____other____none_____*

Environmental Action(s) Recommended (check all that apply):

__**X**__ 1. *Request for Categorical Exclusion*(s)
_____*2. Negative Determination*

_____*3. Negative Determination without conditions*

__**X**___*4. Negative Determination with conditions (soil & water conservation activities under agriculture*)
_____*5. Positive Determination*
_____*6. Deferral*

SUMMARY OF FINDINGS

Sr No.	COMPONENTS	ACTIVITIES	SCALE & QUANTITY*	Tonnage (%) *	PROBABLE CLASSES OF ACTION
1.0	**Community Organization/ Training and Ration Distribution**	Health	240,000 Participants		Categorical Exclusion
		Education	307,200 Participants		Categorical Exclusion
		Humanitarian Assistance/ Emergencies	107,000 Participants		Categorical Exclusion
		Agriculture training on water security, soil and moisture conservation, environment compliance, irrigation and crop husbandry	1000 participants per training per year		Categorical Exclusion
2.0	**Soil and Water Conservation Activities**	Land Leveling	5725 ha	2743.50	Negative Determination with Conditions as per 22 CFR 216.3 (a)(2)(iii)
		Bund Construction	22900 ha	2743.50	Negative Determination with Conditions as per 22 CFR 216.3 (a)(2)(iii)
		Gully Plugging	22900 nos	1829.00	Negative Determination with Conditions as per 22 CFR 216.3 (a)(2)(iii)
3.0	**Water Resource Development Activities**	In Situ Moisture Conservation (5% Model)	1145 nos	1463.20	Negative Determination with Conditions as per 22 CFR 216.3 (a)(2)(iii)
		Check dams	458 nos	2194.80	Negative Determination with Conditions as per 22 CFR 216.3 (a)(2)(iii)
		Construction of Tanks, Reservoirs and Earthen Embankments	458 nos	1829.00	Negative Determination with Conditions as per 22 CFR 216.3 (a)(2)(iii)
		Restoration of Tanks, Reservoirs and Earthen Embankments	458 nos	1829.00	Negative Determination with Conditions as per 22 CFR 216.3 (a)(2)(iii)
		Water conduits and distribution channel	458 nos	1829.00	Negative Determination with Conditions as per 22 CFR 216.3 (a)(2)(iii)
		Wells	687 nos	1829.00	Negative Determination with Conditions as per 22 CFR 216.3 (a)(2)(iii)

APPROVAL OF ENVIRONMENT ACTION RECOMMENDED:

Clearance:

Activity Manager _____ Date: _____

Mission Environment Officer _____ Date: _____

Acting Mission Director _____ Date: _____

CONCURRENCE:

Bureau Environmental Officer _____ Date: _____

Initial Environmental Examination
CRS/India Title II Phase Out Plan
July 2006

1. BACKGROUND AND ACTIVITY DESCRIPTION

1.1 Background

The DAP-II Final Evaluation stated that "CRS has developed a high degree of technical capacity and capability for implementing watershed development projects." CRS and its partners have demonstrated their ability to innovate and adapt technical interventions to location specific requirements. The CRS/India State Office teams have technical expertise and are committed to environmental preservation. The DAP-II evaluation also gave appreciative feedback regarding the capacity of CRS/India's local partner organizations and watershed committee's. In general, the DAP-II evaluation report clearly said that the level of capacity to enhance environmental sustainability shown during the DAP II phase was very good.

CRS/India is in the process of preparing its 2007 to 2009 Phase Out Plan (POP) for USAID. As part of the POP submission, a study was conducted for the IEE. The IEE document was prepared by a team of CRS/India staff. Additionally, Dr. Kamal Bhattacharyya, the CRS Regional Technical Advisor for agriculture and natural resource management, joined the IEE evaluation team.

1.2 Description of Activities

CRS/India agriculture interventions are focused in regions with diverse soil types, crops, precipitation levels, and climatic conditions. The communities targeted by CRS/India programs are also diverse. CRS/India-supported projects will be implemented in relatively small areas, usually less than 200 hectares. The target populations with whom CRS/India works have been forced by environmental degradation, economic collapse, political forces, and social discrimination to live in areas of low agricultural productivity and environmental degradation. *However, it is clear that in the absence of the interventions supported by CRS/India, agricultural production will continue to fall and environmental stress will increase in the marginal areas where CRS/India programs are proposed.*

The watershed approach that CRS/India employs is committed to environmental preservation, and environmentally sound interventions. As in DAP II, CRS has evaluated its previous interventions and has improved upon them. CRS/India programs are integrated, and build the capacity of counterpart organizations. Through these actions, CRS/India has achieved improved natural resource management programming while mitigating potentially harmful environmental threats. The activities under the Phase out plan (POP) are continuation of existing programs and there is no new activity CRS would implement

Agriculture Activities/Program Areas
CRS/India's POP agriculture activities will be divided into four major categories:

- "Community Organization, Training, and Ration Distribution Activities" will focus on responding to the special needs of communities in order to enhance overall outcomes for the participating communities.
- "Soil and Water Conservation Activities" will improve the capacity of the land to retain moisture and to control soil erosion.
- "Water Resource Development Activities" are proposed to capture and conserve rainfall and other water resources. It further focuses on water utilization and second cropping.
- "Emergency Response Activities" are short-term interventions to distribute food and other materials to those affected by large and small-scale emergencies.

1.3 Purpose and Scope of IEE

The agriculture activities proposed for this POP are recommended in three of India's national policy documents (The National Environment Policy, The National Agriculture Policy, and The National Water Policy) as components of sustainable development planning.

CRS/India formed a task force to conduct the IEE for its DAP-II activities. The IEE-team and Dr. Bhattacharyya undertook field trips in states where DAP II agriculture operations were sizable in order to verify the environmental situation resulting from the DAP II implementation. Subsequently, the CRS/India team visited four watershed projects in Rajasthan, Chhattisgarh, Madhya Pradesh, and Jharkhand. The compilation of all the trip reports was done by the CRS/India IEE-Team. The team comprised of:

- Dr. Kamal Bhattacharyya, the Regional Technical Advisor for Natural Resource Management and Agriculture for South Asia
- Mahesh G. Kankal, Coordinator for Agriculture, CRS/India
- Kamakhya Bhattacharya, Coordinator for Agriculture, CRS/India
- Upendra Sonetakke, Partner Support Officer, CRS/Gujarat
- Brajesh Gupta, Partner Support Officer, CRS/Chhattisgarh
- Kushal Neogy, State Representative, CRS/Chhattisgarh

2. COUNTRY AND ENVIRONMENTAL INFORMATION (BASELINE INFORMATION)

2.1 Locations Affected

In the POP, the two environmental activities will be related to water and land.

Water
Water is a prime natural resource. Water is both a basic human need and a precious national asset. Planning, development, and management of water resources need to be governed by national perspectives. According to the last assessment, in1993, out of the total precipitation in the country, 4,000 billion cubic meters, the availability from surface water and replenishable ground water is only 1,869 billion cubic meters. Because of the topographical and other constraints, about 60% of this amount, 690 billion cubic meters from surface water and 432 billion cubic meters from ground water, can be put to beneficial use. Availability of water is highly uneven in terms of coverage and times of precipitation. Precipitation is confined to only

about three months a year and varies from 100 millimeters in the western parts of Rajasthan to over 10,000 millimeters in the Meghalaya region.

Land and Agriculture

Of India's total geographical area of 328.73 million hectares, 264.5 million hectares is used for agriculture, forestry, grazing, and other biomass production. Since 1970 to 1971, the net area sown has remained around 140 million hectares (Ministry of Agriculture and Cooperation 1992) and was 142.22 million hectares during 1998 to 1999. According to the estimates of actual land-use and vegetation cover by the National Remote Sensing Agency and the Forest Survey of India, 80 million hectares out of 142 million hectares is under cultivation and is substantially degraded. Furthermore, out of 75 million hectares of Forest Department owned land about 40 million hectares has a canopy cover of less than 40% (Gadgil 1993). Nearly 11 million hectares of pasturelands is also substantially degraded. Thus, a total of 131 million hectares, representing about 40% of the country's landmass, has a productivity level that is well below its potential. Narayana and Ram Babu (1983) concluded that the annual average rate of soil loss is 16.35 metric tons per hectare. Nearly 29% is permanently lost to the sea; about 10% is deposited in reservoirs, thereby decreasing their storage capacity by 2% annually; and the remaining 61% is merely displaced. Gurmel Singh and Ram Babu, Narain (1990) estimated that the annual erosion rate ranges from less than 5 metric tons per hectare for dense forests, snow-clad cold deserts, and arid regions of western Rajasthan to more than 80 metric tons per hectare in the Shiwalik Hills.

India supports approximately 16% of the world's human population and 20% of the world's livestock population on merely 2.5% of the world's geographical area. The steady population growth, the widespread incidence of poverty, and the current phase of economic and trade liberalization are exerting heavy pressures on India's limited land resources. Human uses such as forestry, agriculture, pastures, settlements, and industry are competing with land conservation measures. This has led to significant land degradation. According to the latest estimates (Sehgal and Abrol 1994), about 187.8 million hectares, out of 328.73 million hectares, of land area has been degraded in one way or another. Most of India's land is degraded or undergoing degradation. Among the different categories of land uses, lands under cultivation face the biggest problem followed by grazing land, forests, barren lands, and uncultivateable lands. The negative effects of land degradation are damaging India's environment and economy. (See the following table.)

Extent of soil degradation (human induced) under different degradation types

Degradation type	**Degree of degradation Area affected**					
	Slight (million ha)	**Moderate** (million ha)	**Strong** (million ha)	**Extreme** (million ha)	**Total** (million ha)	**%**
Water erosion	**27.3**	**111.6**	**5.4**	**4.6**	**148.9**	**45.3**
a. Loss of topsoil (Wt)	27.3	99.8	5.4	-	132.5	40.3
b. Terrain deformation (Wt)	-	11.8	-	4.6	16.4	5.0
Wind erosion	**0.3**	**10.1**	**3.1**	**-**	**13.5**	**4.1**
a. Loss of topsoil (Wt)	0.3	5.5	0.4	-	6.2	1.9

b. Loss of topsoil / terrain deformation (Et/Ed)	-	4.6	-	-	4.6	1.4
c. Terrain deformation / over blowing (Ed/Co)	-	-	2.7	-	2.7	0.8
Chemical deterioration	**6.5**	**7.3**	**-**	**-**	**13.8**	**4.2**
a. Loss of nutrients (Cn)	3.7	-	-	-	3.7	1.1
b. Salinization (Cs)	2.8	7.3	-	-	10.1	3.1
Physical deterioration	**6.4**	**5.2**			**11.6**	**3.5**
Waterlogging (w)	6.4	5.2	-	-	11.6	3.5
Total (affected area)	**40.5**	**134.2**	**8.5**	**4.6**	**187.8**	**57.1**
Land not fit for agriculture Stable terrain					18.2	5.5
Under natural condition (Sn)					32.2	9.8
Total geographical area of India					**328.7**	**100.0**

Source : *Data Book on Mechanization and Agro–Processing Since Independence*, 1997, CIAE, Bhopal.

2.2 National Environmental Policies and Procedures

India's national environmental policies recognize the key environmental challenges that the country faces. The primary drivers of environmental degradation are population growth and industry. National policies state that this situation is leading to changes in relations between people and ecosystems, and development activities such as intensive agriculture, polluting industry, and unplanned urbanization.

Environmental degradation is a major causal factor in enhancing and perpetuating poverty. Rural poor suffer when such degradation impacts soil fertility, quantity and quality of freshwater, air quality, forests, and fisheries.

National policies recognize the dependence of the rural poor, in particular, tribal societies on their natural resources. The poor are particularly vulnerable to the loss of resilience in ecosystems. Large reductions in ecosystem diversity, on which many people's livelihoods are based, causes distress among people. The loss of the environmental resource base can result in people becoming destitute.

Poverty itself can accentuate environmental degradation. For the poor, several environmental resources are complementary (e.g. water in relation to agricultural production, fuel-wood in relation to consumption of food), while a number of environmental resources are a source of income and food (e.g. fisheries and non-timber forest produce). Poverty and environmental degradation are reinforced by population growth.

Land Degradation

The degradation of land, through soil erosion, alkali-salinization, water logging, pollution, and reduction in organic matter content has several underlying causes. They include: 1) the loss of forest and tree cover, leading to erosion by surface water run-off and winds; 2) excessive use of

irrigation, without proper drainage, leading to leaching of sodium and potassium salts; 3) improper use of agricultural chemicals, leading to accumulation of toxic chemicals in the soil; 4) diversion of animal wastes for domestic fuel, leading to reduction in soil nitrogen and organic matter; and the disposal of industrial and domestic wastes on productive land. These things are driven by implicit and explicit subsidies for water, power, pesticides, and the regulatory systems that provide incentives for deforestation. The following specific initiatives will be taken to address land degradation:

- Encourage adoption of science-based, and traditional sustainable land use practices through research and development, pilot scale demonstrations, and large scale dissemination, including farmer's training, and where necessary, access to institutional finance.
- Prepare and implement thematic action plans for arresting and reversing desertification.

Freshwater Resources

India's freshwater resources comprise the single most important class of natural endowments, enabling its economy and its human settlement patterns. Freshwater resources are comprised of river systems, groundwater, and wetlands. Each of these resources is related to other environmental entities.

River Systems

India's river systems typically originate in the mountains and deliver the major part of their water resources to the populations in the plains. They are subject to siltation from sediment loads due to soil loss, itself linked to loss of forest and tree cover. They are also subject to significant net water withdrawals along their course, due to agricultural, industrial, and municipal use; as well as pollution from human and animal waste, agricultural run-offs, and industrial effluents. Although the rivers posses significant natural capacity to assimilate and render harmless many pollutants, the existing pollution inflows in most cases substantially exceed such natural capacities. This fact, together with progressive reductions in stream flows, ensures that the river water quality in the vast majority of cases declines as one goes downstream. The results include the loss of aquatic flora and fauna, leading to loss of livelihoods for river fisherfolk, significant impacts on human health from polluted water, the loss of habitat for many bird species, and the loss of inland navigation potential. Apart from these, India's rivers are inextricably linked with the history and religious beliefs of its people, and the degradation of important river systems accordingly offends their spiritual, aesthetic, and cultural sensibilities.

National policy has suggested action points for river systems:

- Promote integrated approaches to the management of river basins by the concerned river authorities.
- Consider upstream and downstream inflows and withdrawals by season, pollution loads and natural regeneration capacities, and ensure maintenance of adequate flows and adherence to water quality standards throughout their course in all seasons.
- Mitigate the impacts on river flora and fauna, and the resulting change in the resource base for livelihoods, of multipurpose river valley projects, power plants, and industries.
- Mandating the installation of water saving closets and taps in the building by-laws of urban centers.

Groundwater

Groundwater is present in underground aquifers in many parts of the country. Aquifers near the surface are subject to annual recharge from precipitation, but the rate of recharge is impacted by human interference. Deep aquifers, on the other hand, occur below a substratum of hard rock. The deep aquifers generally contain potable water, but since they are recharged only over many millennia, they must be conserved for use only in periods of calamitous drought. The boundaries of underground aquifers do not correspond to the spatial jurisdiction of any local public authority or private holding, nor are they easily discernable. Furthermore, water withdrawals cannot be easily monitored, which leads to the unavoidable situation of underground water aquifers being rapidly depleted. The water table has been falling rapidly in many areas of the country in recent decades. This is largely due to withdrawal for agricultural, industrial, and urban use, in excess of annual recharge. In urban areas, apart from withdrawals for domestic and industrial use, housing and infrastructure prevent sufficient recharge. In addition, some pollution of groundwater occurs due to the leaching of stored hazardous waste and the use of agricultural chemicals, like pesticides. Contamination of groundwater is also due to geogenic causes, such as the leaching of arsenic from natural deposits. Since underground water is frequently a source of drinking water, polluting of the water table can lead to serious health impacts.

The Indian national policy has suggested the following action points for control of groundwater depletion:

- Take explicit account of impacts on groundwater tables of electricity tariffs and the pricing of diesel.
- Promote efficient water use techniques, such as sprinkler or drip irrigation, among farmers. Provide necessary pricing, inputs, and extension support to feasible and remunerative alternative crops from efficient water use.
- Support practices of contour bunding and revival of traditional methods for enhancing groundwater recharge.
- Mandate water harvesting in all new constructions in relevant urban areas, as well as design techniques for road surfaces and infrastructure to enhance groundwater recharge.
- Support research and design in cost effective techniques suitable for rural drinking water projects for removal of arsenic and mainstream their adoption in rural drinking water schemes in relevant areas.

3. EVALUATION OF ACTIVITY/PROGRAM ISSUES WITH RESPECT TO ENVIRONMENTAL IMPACT POTENTIAL

All the physical interventions CRS/India has made during DAP II have had a good effect on the community and the environment. The DAP II has organized communities to act jointly for their economic betterment. Watershed Committees, asset user groups, women's self-help groups, forest protection groups, and farmers' clubs have already been formed in the project areas. Watershed programs have developed a sense of cohesion among the community, the village leaders, and the local development agencies. These village level organizations are working together for the implementation of programs.

The land and water-based physical interventions have improved the agricultural infrastructures with no adverse effects on the environment. Soil conservation, soil moisture level, bio-diversity,

food production have improved significantly. In all the project areas, there are farmers who are progressing and growing market-oriented crops for their cash income. Specialized farming of cash crops such as potato, tomato, and cotton are being grown. Specialized animal husbandry with goats and rabbits are also being raised. This is possible because of additional resource availability and added confidence with the farmers.

Though a number of water resources have been developed, no incidences of water-borne diseases like malaria, typhoid, dengue, or gastroenteritis have been found in the watershed areas. There has been a significant increase in the cropping area, however, incidences of chemical poisoning deaths have not been found in the program areas. This is because CRS/India promotes non-chemical agricultural practices in the watershed project areas. This has also helped sustainability of resource-poor farming communities.

General Social Issues

Areas within the watershed boundary are greener as compared to areas outside, even after only a few years of consecutive drought and below normal rainfall. Water scarcity and consequent low productivity of land, coupled with the close proximity to urban areas, has caused migration for day labor jobs. In the watershed project areas, migration was lower than in non-watershed areas.

Kosi Tola is a farmer group that was formed in the Rukhi Watershed in Nawada district in the state of Bihar. The group is now convinced that if farming is done in a planned manner, with the united effort farmers' groups, then not only will soil erosion be prevented, but their lands will be more fertile as well.

Environmental Issues

Crop diversity has increased during the watershed program. The evaluation team met two farmers named Uddha and Rawat, who used to grow only two crops, maize and bajra, during the monsoon. During the watershed project their lands were evened out and they started growing wheat and cotton during the winter months. Now with the better moisture available due to water harvesting, they have added nine more crops and animals to their fields.

Awareness has been created among farming communities in the watershed are for the judicious use of resources. It was observed that farmers were using water saving techniques.

Non-chemical methods for soil fertility and pest management have increased in the watershed areas. The team visited vermicomposting projects and the preparation of bio-pesticides using locally available herbs.

Water availability in wells has improved in the watershed areas. The evaluation team visited a well, located behind a check dam in one of the watersheds program areas and interacted with the owner of the land, who was a shepherd. The owner described a phenomenal change in the availability of water. He said that water availability was very limited before the check dam, but now the water was 15 feet deep year-round.

Awareness about water quality has increased among the community members in the watershed area. The evaluation team observed women washing clothes on a platform constructed for them

which was separated from the place where people gathered their drinking water and where animals went to drink. This platform was constructed as part of the watershed program.

In Rukhi village in Nawada district in Bihar, watershed farmers have begun to plant pigeon pea, horse gram, black pram, cow pea at the beginning of the monsoon season. These crops not only increase the fertility of the soil, but also prevent soil erosion. At the same time, they also plant crops like sun-hemp, niger, millet, sesame, linseed which requires very little water. Adequate use of in-situ moisture can be seen in these villages.

In Govindpur village in East Singhbhum district in Jharkhand state, watershed trees like arjun, chiral, palash, babool, neem, karanja, subabool, and nishinda are being planted in all the newly constructed staggered contour trenches. These drought tolerant trees help to strengthen the bunds by preventing soil erosion. The leaves that fall from these trees contribute to soil fertility. In addition, these trees are also very useful as sources of fuel wood and fodder. Also in Govindpur, small stony hills which were considered uncultivable have now become green.

In the Rukhi watershed area, the farmers are using cow dung, ash, green manure, and compost as fertilizer for their vegetable crops. To protect the crops from pest attacks various biopest repellants are also being used.

Other Environmental Issues
The evaluation team interacted with the watershed villagers to understand the incidence of any waterborne diseases caused due to introduction of watershed programs. It was reported by the community members that there was no increase in any water borne disease such as malaria, typhoid, or dysentery.

In the watersheds, farmers were using locally produced seeds instead of hybrid seeds.

Marginal lands which were earlier barren have now come under cultivation. Legumes, like green grams, are being used to build soil fertility.

In Lapodia village, a partner organization informed the evaluation team that the watershed program has reduced fluoride concentration in well water. Evidence is based on tests from a Government of India laboratory.

Equity and Efficiency
In some places, farmers are in the process of reducing the number of animals. The farmers gave three reasons for the reduction of animal numbers: 1) long period of drought in the recent past; 2) increased production per animal; and 3) reduced open grazing land.

Representative Case Study 1:
Puta-Kharra Dand Watershed, Chhattisgarh

Project Description
This watershed is located in Lakahnpur in Surguja district in Chhattisgarh state. The watershed is implemented through the Asha Association. Presently, there are 222 households; of which 207

belong to marginalized groups (lower castes and tribe). The total population is 1,061 people. The total area of watershed is 650 hectares; 510 hectares is arable land, 90 hectare forest land, and 50 hectares is under habitation, roads, and streams.

In 2003, pre-watershed interventions focused on community mobilization. Earthen dams, gully plugs, and land leveling were taken up as entry point activities for 7,984 workdays. A watershed committee comprised of 23 members (16 men and 7 women) represented by elected members of 7 self-help groups (4 male and 3 female self-help groups) is monitoring the daily activities of the watershed program. There are a total of 98 members in the self-help groups. The watershed phase started in 2004 and is still continuing. The main interventions taken up in the watershed phase were farm bunding, peripheral bunding, gully plugs, earthen embankments, temporary checkdams (*bori bandhan*), plantation, percolation tanks, and demonstrations of second cropping.

Observations
Earthen embankments: These embankments have a catchment of approximately 4 hectares and will hold water for limited periods (i.e. a maximum of 3 months after the monsoon). Agriculture extension workers were trained to build these embankments. The stone pitching was not provided, and grass pitching was not used. Outlets were not properly constructed: safe disposal of excess runoff was not ensured and potential for erosion was increased.

Gully Plugs: This structure was effective in controlling soil erosion.

Plantation: The plantation was protected from free grazing. The half-moon trenchs helped improve moisture retention and also prevented soil erosion.

Embankments/Ponds: Bund protection was neglected and a berm was not provided. De-silting was neglected which is reducing water storage.

Bund Construction (Peripheral): This has stopped encroaching gully-heads into agriculture land as well as habitat. It has saved several thousand tons of soil from being flushed away in rivers. It has saved around over 200 hectares of agriculture land.

Temporary Checkdams (Bori Bondhan): This is a low cost temporary structure made of empty cement sacks filled with sand. People found it effective to store water in perennial streams. It has helped people improve cropping intensity and diversity in agriculture. This has lead to increased use of fertilizers like urea and manure. There is a need for capacity building for users group on efficient utilization of irrigation water in combination with integrated fertilizer management.

***Representative Case Study* 2**
Jhawaliya Watershed, Madhya Pradesh

Project Description:
Jhawalia watershed is located in Petlawat block in Jhabua district in Madhya Pradesh state. The watershed is implemented through the Jhabua Diocesean Social Service Society. Presently, there are 286 households, with approximately 2,472 people, all of which are tribal people. In 2003, the

total area of the watershed is 632 hectares for pre-watershed interventions focusing on community mobilization. Stone bunding and land leveling was taken up as an entry point activity during 14,461 workdays. The watershed committee is comprised of 10 members (7 male and 3 female) represented by elected members of 7 hamlet committees. There are 4 female and 16 male self-help groups. The watershed phase started in 2004 and is still continuing. The main interventions taken up in the watershed phase were earthen dams, earthen and stone farm bunding, gully plugs, earthen embankments, and percolation tanks during 57,724 workdays.

Observations on Watershed Treatments:
Earthen Embankments: All the earthen embankments have a strong construction and ensure safe disposal or excess water.

Gully Plugs: This structure was found to be effective in controlling soil erosion and siltation of the pond.
Irrigation Tank: This resulted in improved water availability in the wells.
Farm and Stone Bunding: This treatment has played a great role in conserving soil and increasing the moisture availability period, thereby reducing the intensity of labor to plough.

4. RECOMMENDED MITIGATION ACTIONS (INCLUDING MONITORING AND EVALUATION)

4.1 Recommended IEE Determination

CRS/India supported micro watershed projects, using DAP-II resources, have improved the quality of the local environment and have reduced environmental degradation. It has not created irreversible adverse impact on the environment. CRS/India has learned that undertaking natural resource-based developmental projects can help communities to develop in sustainable ways. CRS/India, with its partner organizations, has also learned important lessons about the need to collaborate with research and resource organizations working on these issues. In the future, coordinated inputs from specialists will increase the efficiency of interventions.

4.2 Mitigation, Monitoring, and Evaluation

CRS/India will receive a checklist from USAID that lists the issues to be taken care of in Mission supported projects, based on this CRS/India will prepare check list covering all the POP activities. CRS/India will form a group of master trainers on environmental aspects. This group will receive training on Regulation 216 & application of these in project implementation. The group will then develop a **checklist** & also work towards development of teams in all the states to ensure all the treatments implemented through POP have no or minimal adverse impact on environment. The **checklist developed will be approved by CRS's Country Management Team & would be circulated to all State Offices & agriculture partners of POP.**

CRS/India, together with its partner organizations have learned how to incorporate appropriate mitigation and monitoring procedures by:

- Utilizing the Agriculture Program Manual and the Environment Guidelines for small scale activities to determine what potential impacts should be, especially in the area of agriculture
- Including environmental issues as part of project planning
- Ensuring thorough technical planning with community participation

- Establishing community based monitoring systems

CRS is planning to continue its area-based environment friendly watershed development approach in this POP.

The following are the planned POP activities:

Community Organization/Training

Community Organization/Training: Training in Health, Education and Agriculture	
Potential Adverse Impact: No adverse impacts anticipated	
Mitigation	**Monitoring**
	Monitor content, number, attendance at training and behavioral change brought about by the training
Recommended Determination: Categorical Exclusion as per 22 CFR 216.2 (c)(1)(i) and (c)(2)(i)	

Ration Distribution in Health, Education Humanitarian Assistance (including Emergency) and Agriculture	
Potential Adverse Impact: No adverse impacts anticipated	
Mitigation	**Monitoring**
	Current commodity monitoring systems for Title II food utilization
Recommended Determination: Categorical Exclusion as per 22 CFR 216.2 (c)(1)(i) and (c)(2)(xi)	

Soil and Water Conservation Activities on Existing Agricultural Land

<table>
<tr><td colspan="2"><u>Land leveling (Terracing)</u></td></tr>
<tr><td colspan="2">Potential Adverse Impact: Possible loss of fertile top soil cover</td></tr>
<tr><td>Mitigation</td><td>Monitoring</td></tr>
<tr><td>• Leveling done as per guidance in the technical feasibility report of the watershed plan
• Training farmers on the use of A frame
• Construction or strengthening of farm bunds to ensure minimum soil erosion.
• Spillways at appropriate places & of capacity to carry excess water.
• Training and exposure of farmers on appropriate tillage methods, bund plantation and cultivation of short period leguminous crop to conserve soil cover and enhance fertility
• Orientation to Agriculture Extension Worker and other field workers on procedures for protection of top soil</td><td>• Agriculture extension worker will monitor the use of A frame and appropriate cutting of earth by farmers as per guidance in the Technical Feasibility Report
• Farm tillage will be closely supervised by agriculture extension worker and watershed community
• Land leveling, tillage and ground cover with leguminous crop will be monitored by coordinating partners and CRS agriculture staff through spot visits</td></tr>
<tr><td colspan="2">Rationale: Though land leveling is considered to be potentially dangerous for the environment, the CRS land leveling interventions are done on a very small scale. Land leveling is used to improve the productivity of lands already under cultivation and with appropriate bunding practices brings a vast improvement to soil stabilization.</td></tr>
<tr><td colspan="2">Conditions: The robust spillways are constructed.
The spillways will conserve soil & discharge excess runoff of water.
CRS State Office & Agriculture Coordinating Partner have technical staff for local specific designs & implementation.
CRS & Partner conducts environmental monitoring using the check list
The top soil of excavated portion is collected & used in agriculture or nursery raising activities.
Removal of vegetation (trees & bushes) be avoided in case they are removed, the project should include replacement of such vegetation in its implementation plan.</td></tr>
<tr><td colspan="2">Recommended Determination: Negative Determination with conditions as per 22 CFR 216.3 (a)(2)(iii)</td></tr>
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<table>
<tr><th colspan="2"><u>Field Bund Construction/Improvement</u></th></tr>
<tr><td colspan="2">Potential Adverse Impact Poor technical design or faulty construction may lead to breaching of bunds and high soil erosion</td></tr>
<tr><th>Mitigation</th><th>Monitoring</th></tr>
<tr><td>Design of bunds with clear instruction on the location of spillways will be provided in technical feasibility reporting. The technical feasibility study will involve technical specialists, project management staff and community members
Appropriate bund stabilization recommendation (stone spillways, vegetation etc) will be designed as per Technical Feasibility Report recommendation to ensure the bunds adjoining to the spillways are strong enough to withstand the pressure of water.
Local species of soil binding vegetation will be promoted in the community for bund plantation in consultation with local research institutes, universities, forest department etc.
Exposure will be provided to farmers on appropriate design and construction of bunds and soil enriching bund plantation species</td><td>Bund construction will be closely supervised by agriculture extension worker
Monitoring for siltation and maintenance will be done by the operating partner agriculture extension worker seasonally and reported to coordinating partners Agriculture Coordinator quarterly
# of farmers adapting bund plantation will be recorded and spot checked through visual monitoring</td></tr>
<tr><td colspan="2">Rationale: This is a red flag activity, however it is done in small scale areas as an improvement.</td></tr>
<tr><td colspan="2">Conditions: The robust spillways are constructed; the bunds containing the spillways would be compacted & made strong enough to hold water.
The spillways will conserve soil & discharge excess runoff of water.
CRS State Office & Agriculture Coordinating Partner have technical staff for local specific designs & implementation.
CRS & Partner conducts environmental monitoring using the check list.
Removal of vegetation (trees & bushes) be avoided in case they are removed, the project should include replacement of such vegetation in its implementation plan.</td></tr>
<tr><td colspan="2">Recommended Determination: Negative Determination with condition as per 22 CFR 216.3 (a)(2)(iii)</td></tr>
</table>

SOIL WATER CONSERVATION - Fallow Agricultural Land

SOIL WATER CONSERVATION - Fallow Land: Land leveling	
Potential Adverse Impact	Possible loss of fertile top soil cover
Mitigation	**Monitoring**
As for soil and water conservation-Agricultural Land: Land Leveling	As for soil and water conservation-Agricultural Land: Land Leveling
Conditions: The robust spillways are constructed; the bunds containing the spillways would be compacted & made strong enough to hold water. The spillways will conserve soil & discharge excess runoff of water. CRS State Office & Agriculture Coordinating Partner have technical staff for local specific designs & implementation. CRS & Partner conducts environmental monitoring using the check list Removal of vegetation (trees & bushes) be avoided in case they are removed, the project should include replacement of such vegetation in its implementation plan.	
Recommended Determination: Negative Determination with conditions as per 22 CFR 216.3 (a)(2)(iii)	

SOIL WATER CONSERVATION - Fallow Land: Bund Construction/Improvement	
Potential Adverse Impact	Bunding without spillway may lead to water logging and breach of bund causing more erosion than before
Mitigation	**Monitoring**
As for SOIL WATER CONSERVATION-Agricultural Land: Bund Construction/Improvement	As for SOIL WATER CONSERVATION-Agricultural Land: Bund Construction/Improvement
Conditions: The robust spillways are constructed, the bunds containing the spillways would be compacted & made strong enough to hold water. The spillways will conserve soil & discharge excess runoff of water. CRS State Office & Agriculture Coordinating Partner have technical staff for local specific designs & implementation. CRS & Partner conducts environmental monitoring using the check list Removal of vegetation (trees & bushes) be avoided in case they are removed, the project should include replacement of such vegetation in its implementation plan**.**	
Recommended Determination: Negative Determination with condition as per 22 CFR 216.3 (a)(2)(iii)	

<table>
<tr><th colspan="2"><u>SOIL WATER CONSERVATION – Environmental Mitigation/Stabilization/Restoration: Gully Plugging</u></th></tr>
<tr><td colspan="2">Potential Adverse Impact Poor technical design or faulty construction may lead to breaching of plugs, flooding in the gullies and high soil erosion</td></tr>
<tr><th>Mitigation</th><th>Monitoring</th></tr>
<tr><td>Technical designing of gullies will be done in conjunction with the communities to ensure planning based appropriate rainfall intensity data
Construction material for gully should be locally available and cheap to ensure easy maintenance and repair (rocks, plants etc)
Appropriate spillways will be designed with gully plugs
Gullies will be repaired after the first year of monsoon and subsequently every time it breaches.</td><td>Construction of gully plugs will be supervised by agricultural extension worker and Counterpart staff.
Visual monitoring by communities and agricultural extension worker regularly to identify breaches if any to ensure early repair
Monitoring for breach and maintenance will be done by the operating partners and agricultural extension workers seasonally and reported to coordinating partners Agriculture Coordinator quarterly
All agriculture partners should have staff that is sufficiently trained to repair such breaches.
Spot monitoring by coordinating partners and CRS agriculture staff</td></tr>
<tr><td colspan="2">Conditions: CRS State Office & Agriculture Coordinating Partner have technical staff for local specific designs & implementation.
CRS & Partner conducts environmental monitoring using the check list (pre & post Monsoon).</td></tr>
<tr><td colspan="2">Recommended Determination: Negative Determination with condition as per 22 CFR 216.3 (a)(2)(iii)</td></tr>
</table>

Water Resource Development Activities

<table>
<tr><th colspan="2"><u>5% Model of In Situ Moisture Conservation</u></th></tr>
<tr><td colspan="2">Potential Adverse Impact Inappropriate site selection of 5% pit on the agriculture plot may lead to reduced water conservation and a waste of farmer investment</td></tr>
<tr><th>Mitigation</th><th>Monitoring</th></tr>
<tr><td>Slope of land and soil quality to be taken into account for designing and siting of 5% pits
To avoid breeding of mosquitoes, short duration fish spawns can be raised in the 5% ponds
Community mobilization and training to be done to ensure implementation of 5% ponds across contiguous slopes and hence increased benefit through filtration</td><td>Close monitoring by agricultural extension worker and watershed community during land selection for 5% and implementation
Monitoring number, content and attendance of trainings on 5% pit construction
Monitoring the number of months water retained in the 5% pit through visual monitoring by Watershed committee and agricultural extension workers.</td></tr>
<tr><td colspan="2">Conditions: The slope of selected plot should not be more than 2%
CRS watershed staff/expert hired should clearly identify the specific location within watershed.
The partner to maintain the photo documentation of marking & layout with asset holder /user group & technical person/staff who is responsible for environmental aspects.
The maximum depth of pit should not be more than 3 meters below the prevailing ground level, the pit should have steps of at maximum of 0.6 X 0.6 meter size.
The top soil of excavated portion is collected & used in agriculture or nursery raising activities.
Removal of vegetation (trees & bushes) be avoided in case they are removed, the project should include replacement of such vegetation in its implementation plan.</td></tr>
<tr><td colspan="2">Recommended Determination: Negative Determination with conditions as per 22 CFR 216.3 (a)(2)(iii)</td></tr>
</table>

<table>
<tr><th colspan="2"><u>Checkdam</u></th></tr>
<tr><td>Potential Adverse Impact</td><td>Poor maintenance could result in siltation with possibility of flooding surrounding agricultural lands

Possible change in cropping patterns and practice leading to monoculture

Checkdam without spillway may lead to water logging and breach of bund</td></tr>
<tr><th>Mitigation</th><th>Monitoring</th></tr>
<tr><td>• Desilt bed periodically to check flooding
• Pisciculture introduction in the impounded water to reduce disease vectors
• Orientation on improved cropping practices to ensure mixed culture and appropriate crop rotation
• Training on water resource management and maintenance
• Spillways will be included at planning and implementation stages to avoid water-logging and erosion
• Species local, multi-use soil binding vegetation will be planted along the bunds where applicable</td><td>• Regular supervision by agricultural extension workers and coordinating partners staff during implementation will ensure construction of the dam as per technical feasibility report
• Any change in design or construction material will need the approval of CRS or technical feasibility group
• Periodic desilting verified through visual monitoring by agricultural extension workers, reported in progress reports
• Watershed committee maintain record of quantity of fingerlings introduced.
• Monitoring number, content and attendance of trainings on improved crop practice and water resource management</td></tr>
<tr><td colspan="2">Conditions: The slope of selected stream section (up to water storage area) should not be more than 2%
CRS watershed staff/expert hired should clearly identify the specific location within watershed.
The partner to maintain the photo documentation of marking & layout with asset holder /user group & technical person/staff who is responsible for environmental aspects.
The maximum height of main wall should not be more than 4 meters from the stream bed.
The maximum width of main wall should not be more than 30 meter.
Removal of vegetation (trees & bushes) be avoided in case they are removed, the project should include replacement of such vegetation in its implementation plan.</td></tr>
<tr><td colspan="2">Recommended Determination: <u>Negative Determination with conditions as per 22 CFR 216.3 (a)(2)(iii)</u></td></tr>
</table>

<table>
<tr><th colspan="2"><u>Tank (Pond), Reservoir, Earthen Embankment</u></th></tr>
<tr><td>Potential Adverse Impact</td><td>Possible disease vector</td></tr>
<tr><td></td><td>Water pollution through waste inflow
Poor maintenance could increase risk of flooding/gully formation if breached
Possible change in cropping patterns/practice leading to monoculture
Over-irrigation could lead to waterlogged conditions
Possible erosion</td></tr>
<tr><th>Mitigation</th><th>Monitoring</th></tr>
<tr><td>• Technical designing of the check dam will take into account both community knowledge and technical information regarding crops, hydrological information, soil conditions etc
• Orientation and training on structure management and maintenance with regular desilting schedule
• Designing embankment with lined structure around pond to restrict flow of fecal waste, animal waste and chemicals into pond
• Introduction of pisciculture
• Training on water resource management and maintenance</td><td>• Regular supervision by agricultural extension workers and operating partner staff during construction will ensure construction of the irrigation structure as per technical feasibility report
• Any change in design or construction material will need the approval of CRS or technical feasibility group.
• Periodic desilting verified through visual monitoring by agricultural extension workers, reported in progress reports
• Watershed committee maintain record of quantity of fingerlings introduced
• Number, content and attendance of water management trainings will be monitored and reported annually by agricultural extension workers</td></tr>
<tr><td colspan="2">Conditions: The slope of selected site selected should not be more than 5%
CRS watershed staff/expert hired should clearly identify the specific location within watershed.
The partner to maintain the photo documentation of marking & layout process with village development committee members /user group & technical person/staff who is responsible for environmental aspects.
The maximum depth of pond should not be more than 6 meters below the prevailing ground level; the pit should have steps of at maximum of 0.9 X 0.6 meter size.
The top soil of excavated portion is collected & used in agriculture or nursery raising activities
Removal of vegetation (trees & bushes) be avoided in case they are removed, the project should include replacement of such vegetation in its implementation plan.</td></tr>
<tr><td colspan="2">Recommended Determination: <u>Negative Determination with conditions as per 22 CFR 216.3 (a)(2)(iii)</u></td></tr>
</table>

<table>
<tr><th colspan="2"><u>Water conduits and distribution channel</u></th></tr>
<tr><td>Potential Adverse Impact</td><td>Poor construction, maintenance or lining may result in heightened soil erosion and filling of canals
Over-irrigation
Danger of introduction of monocropping</td></tr>
<tr><th>Mitigation</th><th>Monitoring</th></tr>
<tr><td>• Technical designing of canal with community participation
• Locally available material used for lining of canal to ensure continued maintenance
• Regulation for water share and canal repair and maintenance designed by the community
• Training to farmers on crop water requirement, crop and irrigation planning</td><td>• Monitoring by watershed committee, agricultural extension workers and operating partners, and CRS staff, using voluntary monitoring for unintended consequences
• Water share and maintenance rules recorded in Watershed committee regulation register
• Use of water by farmers recorded by watershed committee or persons appointed by the committee
• Training monitored as in above activities</td></tr>
<tr><td colspan="2">Conditions: The slope of constructed conduits should not be more than 1%
CRS watershed staff/expert hired should clearly identify the specific location within watershed.
The partner to maintain the photo documentation of marking, layout and implementation process with asset holder /user group & technical person/staff who is responsible for environmental aspects.
Removal of vegetation (trees & bushes) be avoided in case they are removed, the project should include replacement of such vegetation in its implementation plan.</td></tr>
<tr><td colspan="2">Recommended Determination: <u>Negative Determination with conditions as per 22 CFR 216.3 (a)(2)(iii)</u></td></tr>
</table>

<table>
<tr><th colspan="2"><u>Well</u></th></tr>
<tr><td>Potential Adverse Impact</td><td>Overdrawing of well water for irrigation
Over-irrigation</td></tr>
<tr><td>Mitigation</td><td>Monitoring</td></tr>
<tr><td>• Training to farmers on crop water requirement, crop and irrigation planning
• Regular monitoring of water levels in the well</td><td>• Monitoring by watershed committee, agricultural extension workers, operating partners, and CRS staff, using voluntary monitoring
• Water share and maintenance rules recorded in Watershed committee regulation register
• Use of water by farmers recorded by watershed committee or persons appointed by the committee
• Training monitored as in above activities
• Analyze well water for arsenic</td></tr>
<tr><td colspan="2">Rationale: This is a red flag activity, however it is done in small scale areas as an improvement. Conditions are highlighted above under mitigation and monitoring.</td></tr>
<tr><td colspan="2">Conditions: CRS watershed staff/expert hired should clearly identify the specific location within watershed.
The size of any well should not be more than 15 meter in width/diameter & 20 ground level meter in depth.
The partner to maintain the photo documentation of marking, layout and implementation of activity with asset holder /user group & technical person/staff who is responsible for environmental aspects.
Every well should have parapet wall of at least 0.8 meter above ground level.
Removal of vegetation (trees & bushes) be avoided in case they are removed, the project should include replacement of such vegetation in its implementation plan.</td></tr>
<tr><td colspan="2">Recommended Determination: Negative Determination with conditions as per 22 CFR 216.3 (a)(2)(iii)</td></tr>
</table>

5. SUMMARY OF FINDINGS

5.1 Environmental Determinations

Based on the environmental review presented in this document, the following determinations are recommended:

Categorical Exclusion is recommended for the training activities proposed by Safe Motherhood and Child Survival, Human Capacity Development, and the agriculture program. The same determination is recommended for the ration supplement provided to pregnant, lactating women, and families with children under three. Categorical exclusion is recommended for the ration provided to primary schoolchildren enrolled in the Human Capacity Development program and for the agriculture activities (bund construction; land leveling on gullied land; gully plugging; insitu moisture conservation; restoration of an existing tank, reservoirs, earthen embankments; and wells).

Negative Determination with Condition is recommended for agriculture activities. It is important to note that in the current DAP II and DAP I, CRS/India obtained environmental compliance certificates from USAID for all of its activities. CRS/India also undertook training activities to build the capacities of different stakeholders regarding environmental concerns at various levels. Moreover, CRS/India has trained all of its agriculture partners on projects related to soil and water conservation. All the CRS/India State Offices are equipped with the Agriculture Program Manual which describes how these treatments need to be designed. The watershed approach is a sustainable and environmental friendly development activity. Prior to the implementation of Regulation 216, CRS/India was already initiated evaluating the environmental impacts of its development activities through the CRS/India Environmental Assessment of Irrigation Practices.

5.2 Conditions

CRS/India's POP training & community organization activities will have no adverse effects on the environment, and therefore a negative determination without conditions is recommended. However certain soil and water conservation activities, water resource development activities are recommended with negative determination with conditions. These conditions are highlighted in the tables pertaining to the treatments. The environmental impacts of the planned CRS/India activities will be monitored and evaluated using the aforementioned measures. CRS/India will undertake activities discussed in this IEE. CRS/India will promote eco-friendly agro-techniques.